

**CLASS 71, CHEMISTRY: FERTILIZERS****SECTION I - CLASS DEFINITION**

This class is directed to methods of production and manufacture of substances having a nutrient action on plant growth. It also includes the products of such methods and compositions or mixtures having these characteristics, and forms of chemical compounds or mixtures peculiarly adapted and designed to make them more available for use and distribution as a fertilizer.

- (1) Note. Fertilizers admixed with preserving agents are in this class. See the class definitions of appropriate compound and composition classes for the classification of preservative additives.

**SECTION II - LINES WITH OTHER CLASSES AND WITHIN THIS CLASS**

See References to Other Classes, below, for apparatus for making fertilizers not specifically provided for in other classes.

See References to Other Classes, below, for drying processes, per se, and for processes for contacting solids with gases or vapors not restricted to fertilizer manufacture.

This class (71) includes, in subclasses 5+ and below processes of applying a specific fertilizer composition to plants or soil. Those processes which do not involve the application of a specific composition are classified in the appropriate class of which Class 47 is the generic class; see the definition and notes of that class for the line with the other classes. Processes which include some manipulation of the soil are classified in Classes 47, 111, or 172 in accordance with the line between those classes. Plant pots or molds made of fertilizer material and mulching sheets which are made of or compose a fertilizer ingredient are in Class 47. Compositions of seeds and fertilizer are in Class 71.

See Class 426, Food or Edible Material: Processes, Compositions, and Products, appropriate subclasses for animal foods. If a composition (product) is usable either as an animal food or a plant food, it is classifiable in Class 426 and cross referenced to Class 71.

See Class 504, Plant Protecting and Regulating Compositions, for compositions and compounds for treating living terrestrial and aquatic plants or their habitats for

the purpose of stimulating, inhibiting or retarding growth, defoliating, or killing said plants, and the processes of using such compositions or compounds for such purposes which are not more than their mere application to the plant or habitat. Compositions disclosed as having unequivocal fertilizer value in addition to biocidal or deodorant value are in Class 504 and cross-referenced to Class 424 or 514. Class 504 specifically provides for algicidal compositions.

Only those compositions which alter the plant through a chemical modification of the plant metabolism such as auxins are included in Class 504. The line between a chemical which causes a plant metabolism response and a fertilizer or plant food is somewhat difficult, but for purposes of this class the following applies: (1) compositions having only a fertilizing affect and (2) compositions which are disclosed as having both a stimulating and fertilizing action and wherein the composition taken as a whole merely exhibits its stimulating affect as a response to the fertilizing action and wherein no disclosure is made as to the specific response, except for general statements as to "stimulating and fertilizing affects", are not in Class 504, but may be found in the appropriate fertilizer subclass in Class 71. Compositions which include a plant stimulant as well as a fertilizer or biocide (insecticide, fungicide, etc..) are classified in Class 504.

Compositions which are added to prevent or cure mineral or plant food deficiencies are excluded from Class 504. For example, the addition of iron chelates to cure or prevent iron chlorosis are found in the appropriate subclass of Class 71.

See Class 210, Liquid Purification or Separation, appropriate subclasses, particularly subclasses 601+ for processes for the treatment of sewage to separate solids and liquids and purify or dry the same. If other treatment, beyond separation, purifying or drying, is included, which is directed to improving the character as a fertilizer, see this class (71).

The rules for determining Class placement of the Original Reference (OR) for claimed chemical compositions are set forth in the Class Definition of Class 252 in the section LINES WITH OTHER CLASSES AND WITHIN THIS CLASS, subsection COMPOSITION CLASS SUPERIORITY, which includes a hierarchical ORDER OF SUPERIORITY FOR COMPOSITIONS CLASSES.

### SECTION III - REFERENCES TO OTHER CLASSES

#### SEE OR SEARCH CLASS:

- 34, Drying and Gas or Vapor Contact With Solids, for drying processes, per se, and for processes for contacting solids with gases or vapors not restricted to fertilizer manufacture.
- 100, Presses, subclasses 35+ for methods of pressing not elsewhere provided for.
- 209, Classifying, Separating, and Assorting Solids, appropriate subclasses for flotation processes of concentrating mineral, such as crude phosphate, to give an improved fertilizer..
- 204, Chemistry: Electrical and Wave Energy, for electrical or wave energy methods involving chemical reactions which are caused by more than the mere thermal effects of the electrical or wave energy for the preparation of compounds or elements useful for fertilizer compositions, see Class .
- 210, Liquid Purification or Separation, appropriate subclasses, particularly subclasses 601+ for processes for the treatment of sewage to separate solids and liquids and purify or dry the same. If other treatment, beyond separation, purifying or drying, is included, which is directed to improving the character as a fertilizer, see this class (71).
- 422, Chemical Apparatus and Process Disinfecting, Deodorizing, Preserving, or Sterilizing, for apparatus for making fertilizers not specifically provided for in other classes.
- 423, Chemistry of Inorganic Compounds, subclasses 265+ for inorganic compounds with additives and see the notes thereto for the general line between Class 423 and composition classes.
- 435, Chemistry: Molecular Biology and Microbiology, for making, separating, or purifying substances by processes that include fermentations; for processes of making or treating living organisms, enzymes, or ferments; and for compositions or apparatus for use in such processes.
- 504, Plant Protecting and Regulating Compositions, for compositions and compounds for treating living terrestrial and aquatic plants or their habitats for the purpose of stimulating, inhibiting or retarding growth, defoliating, or killing said plants, and the processes of using such compositions or compounds for such purposes which are not more than their mere application to the plant or habitat. Compositions disclosed as

having unequivocal fertilizer value in addition to biocidal or deodorant value are in Class 504 and cross-referenced to Class 424 or 514. Class 504 specifically provides for algicidal compositions in subclasses 150+, stunting and dwarfing compositions in subclasses 174+, and sucker control compositions in subclasses 184+.

- 520, Synthetic Resins or Natural Rubbers, appropriate subclasses, particularly Class 523, subclass 122 for a composition containing a synthetic resin or natural rubber and an ingredient which prevents the commencement of biocidal deterioration from fungi, bacteria, or other organisms of the resin and which does not include a fertilizer; subclasses 124+ for a composition containing a synthetic resin or natural rubber which is claimed or solely disclosed as having enhanced degradability by exposure to an environmental stimulus; and subclasses 132+ for a composition containing a synthetic resin having utility in situ as a soil conditioner or stabilizer or to processes of preparing said composition.

#### SUBCLASSES

- 1 This subclass is indented under the class definition. All processes and products which are not provided for in the following subclasses.

#### SEE OR SEARCH CLASS:

- 422, Chemical Apparatus and Process Disinfecting, Deodorizing, Preserving, or Sterilizing, appropriate subclasses for fertilizer producing apparatus not specifically provided for in other classes.
- 5 Products of special value in the cultivation of fungi, such as mushrooms, and processes of making them.
  - (1) Note. If the claims include the mycelium or spawn, the patent is classified in Class 47, Plant Husbandry, and cross-referenced here.

#### SEE OR SEARCH CLASS:

- 435, Chemistry: Molecular Biology and Microbiology, particularly subclasses 254.1 through 256.8 for subject matter directed to a composition having

- utility as a fungal culture medium (i.e., media for maintenance, growth, production, etc.) or a technique for preparing or using the same.
- 6** This subclass and those indented hereunder include fertilizer products and the methods of making them, which involve the use and action of enzymes or bacteria.
- 7** This subclass is indented under subclass 6. Methods and compositions where nitrogen fixing or nitrifying bacteria is utilized.
- 8** This subclass is indented under subclass 6. Processes directed to autogenous fermentation or decomposition and the products of such processes.
- 9** This subclass is indented under subclass 8. Processes and compositions where the fermentation is aerobic.
- SEE OR SEARCH CLASS:  
210, Liquid Purification or Separation, subclasses 601+, especially 604, 605, 615+, and 620+ for aerobic treatment of sewage.
- 10** This subclass is indented under subclass 8. Processes and compositions where the fermentation is anaerobic.
- SEE OR SEARCH CLASS:  
210, Liquid Purification or Separation, subclasses 601+ especially 605 and 630 for anaerobic treatment of sewage.
- 11** Methods of making organic containing fertilizers and corresponding products. In this subclass inorganic values may or may not be included.
- 12** Processes of preparing fertilizer from sewage or night soil, and the corresponding products.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
13, if other organic fertilizer materials are included.
- 13** This subclass is indented under subclass 12. Patents in which other organic substances of fertilizer value are included. If such added organic values are hereinbelow listed, they are cross-referenced below.
- 14** Processes of preparing fertilizer from garbage and corresponding products. If other organic values, such as those listed below, are present, they are cross-referenced below.
- 15** Processes for preparing fertilizer and corresponding products, not hereinabove classified, which include animal matter not listed among any of the indented types below or which include a plurality of the said indented types.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
22, if including organic fertilizer other than animal matter.
- 16** This subclass is indented under subclass 15. Inventions in which the marine animal matter is the only type of animal matter present; other organic fertilizer values, except other animal derivatives, such as are classified below, may also be included.
- 17** Animal matter from blood is the only type of animal matter present; other organic fertilizer values, except other animal derivatives such as are classified below may also be included.
- 18** This subclass is indented under subclass 15. and including animal matter derived from horn, hair, feathers, wool, leather, etc.; other organic fertilizer values except other animal derivatives such as are classified below, may also be included.
- 19** This subclass is indented under subclass 15. and including animal matter derived from bone as the only type of animal matter present.
- 20** This subclass is indented under subclass 19. Processes and products which include other organic fertilizer values except other animal derivatives such as are classified below.
- 21** This subclass is indented under subclass 15. and including guano and animal excretions, generally, as the only types of animal matter

- present. Other organic fertilizer values, except animal matter such as classified below, may also be present.
- 22** This subclass is indented under subclass 15. Processes and products which include other organic values such as are classified hereinbelow.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
13, 20.
- 23** This subclass is indented under subclass 11. Processes and products, of preparing fertilizers from vegetable material; other organic values such as classified hereinbelow may also be present.
- 24** This subclass is indented under subclass 23. Processes and products which include humus material, peat, lignite, coal and carbon. Other organic fertilizer values classifiable below may also be present.
- 25** This subclass is indented under subclass 11. Processes and products which include industrial wastes. Industrial wastes, within the meaning of this subclass, include ashes, cinders, paper, flue dust, waste liquors from paper manufacture, tanning liquors, corn steep liquors, gas liquor, etc.; in brief, any substance of organic origin ordinarily considered a waste material resulting from an industrial process and not provided for above. Other organic fertilizer values, such as classified hereinbelow, may also be present.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
42, 43, for gas liquors used in alkaline treatment or neutralization of phosphates.
- 26** This subclass is indented under subclass 25. Processes and products in which the industrial waste is from sugar manufacture or distillery wastes. The use of sugar is also included. Other organic fertilizer values, such as classified hereinbelow or not otherwise provided for, may also be included.
- 27** This subclass is indented under subclass 11. Processes which include preparing synthetic organic fertilizers and the corresponding products.
- SEE OR SEARCH CLASS:  
204, Chemistry: Electrical and Wave Energy, for electrical or wave energy methods involving chemical reactions which are caused by more than the mere thermal effects of the electrical or wave energy for synthetic preparation of compounds or elements useful for fertilizer compositions.  
205, Electrolysis: Processes, Compositions Used Therein, and Methods of Preparing the Compositions, subclasses 334+ for electrolytic synthesis of compounds or elements useful for fertilizer compositions.
- 28** This subclass is indented under subclass 27. Processes in which the organic fertilizer contains urea or one of its derivatives, and corresponding products.
- 29** This subclass is indented under subclass 28. Processes and products which include inorganic P containing substances, such as phosphates.
- 30** This subclass is indented under subclass 28. Processes or products which include inorganic N containing substances, other than  $\text{NH}_4$ , such as nitrates. Thus, fertilizers containing urea admixed with a nitrate and urea nitrate both belong in this subclass.
- 31** Methods of making fertilizer containing only inorganic materials and the corresponding products, when not provided for in any of the indented subclasses.
- 32** This subclass is indented under subclass 31. Methods and products in which the fertilizer contains P.
- 33** This subclass is indented under subclass 32. Methods directed to the preparation of inorganic fertilizers containing phosphates.
- (1) Note. Subclasses 33-47 are primarily process subclasses but include products

- corresponding thereto when such are claimed along with the processes, in which case the products are cross-referenced to subclass 48 and indented subclasses.
- 34** This subclass is indented under subclass 33. Methods directed to the preparation of inorganic fertilizers containing alkali metal or ammonium phosphates as the only phosphates present.
- 35** This subclass is indented under subclass 34. Processes, , which also include inorganic N containing values, other than  $\text{NH}_4$ .
- 36** This subclass is indented under subclass 34. Processes, , which include an added inorganic alkali metal or ammonium compound.
- 37** Methods of preparing phosphatic fertilizers where the starting materials are treated with an acid or a mixture of acids.
- (1) Note. Methods employing mixtures of acids which are separately provided for hereunder are included in this subclass, e.g., a mixture of sulfuric and phosphoric acids.
- 38** This subclass is indented under subclass 37. Processes wherein the acid is supplied in the gaseous state.
- 39** This subclass is indented under subclass 37. Processes wherein the acid supplied is  $\text{HNO}_3$  or  $\text{HCl}$  mixed in the liquid state.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
37, for  $\text{HNO}_3$  or  $\text{HCl}$  mixed with another acid.
- 40** This subclass is indented under subclass 37. Processes wherein the acid used in  $\text{H}_2\text{SO}_4$ .
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
37, for  $\text{H}_2\text{SO}_4$  mixed with another acid.  
38, for treatment with sulphuric acid anhydride.
- 41** This subclass is indented under subclass 37. Processes wherein the acid used is an acid of phosphorus.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
37, for an acid of phosphorus mixed with another acid, see this class.
- 42** This subclass is indented under subclass 33. Methods of preparing phosphate containing fertilizers wherein the starting materials are treated with a distinctly alkaline substance such as the alkali metal oxides, hydroxides and carbonates or the alkaline earth metal oxides or hydroxides.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
43, for mere neutralization of an acid fertilizer.  
44+, for distinctively high temperature treatment.
- 43** This subclass is indented under subclass 33. Methods directed to the neutralization of an acidic or basic material by treatment with a reagent which will accomplish the neutralization.
- 44** This subclass is indented under subclass 33. Methods of preparing phosphate containing fertilizers wherein the raw materials are subjected to a heat treatment, usually a high temperature heat treatment which is the essential or dominating feature of the process. Thus, the heat treatment of phosphate rock alone or in the presence of an inorganic substance at white, red or fusion heat temperatures, belongs here, irrespective of whether or not the substance is distinctly alkaline.
- 45** This subclass is indented under subclass 44. Processes wherein both alkali metal and silicon values are present at some stage of the process; other inorganic compounds may also be present. The preponderance of patents in this subclass apply the heat treatment in the presence of the alkali metal and silicon values.
- 46** This subclass is indented under subclass 45. Processes wherein Si values are not present.

- 47** This subclass is indented under subclass 44. Processes wherein carbonates, oxides, sulphates, halides or silicon values, one or more, are present at some stage of the process. As in the preceding heat treatment subclasses, the added values are ordinarily present during the heat treatment.
- 48** This subclass includes all patents directed to a phosphate containing fertilizer.
- 49** This subclass is indented under subclass 48. Products which contain also inorganic N values, other than or in addition to NH<sub>4</sub>.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
51, for products wherein the only inorganic N value is NH<sub>4</sub>.
- 50** This subclass is indented under subclass 42. Products which contain also inorganic nitrates.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
33, 37-47, for processes.
- 51** This subclass is indented under subclass 48. Products which contain also inorganic alkali metal or ammonium compounds.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
45, 46.
- 52** This subclass is indented under subclass 48. Products which contain also inorganic silicon values.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
45, 47.
- 53** This subclass is indented under subclass 48. Products which contain also inorganic carbonates, oxides, sulphates, or halides, not herein above provided for.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
47, .
- 54** This subclass is indented under subclass 31. Methods directed to the preparation of inorganic fertilizers containing N values other than or in addition to NH<sub>4</sub> and products corresponding to these methods.
- 55** This subclass is indented under subclass 54. Methods and products in which the N value is a cyanamide or a derivative thereof.
- 56** This subclass is indented under subclass 55. Methods and products which include in addition to cyanamide another inorganic N value (except NH<sub>4</sub> values only), such as nitrates.
- 57** This subclass is indented under subclass 55. Methods and products which include in addition to cyanamide, inorganic alkali metal or ammonium values.
- 58** This subclass is indented under subclass 54. Processes directed to the preparation of an inorganic fertilizer containing nitrates and corresponding products.
- 59** This subclass is indented under subclass 58. Processes and products which include, additionally, alkali metal or ammonium values.
- 60** This subclass is indented under subclass 58. Processes and products which include, additionally, carbonates, oxides, sulphates or halides, one or more.
- 61** This subclass is indented under subclass 31. Processes and products directed to the preparation of inorganic fertilizers containing alkali metal or ammonium values.
- 62** This subclass is indented under subclass 31. Processes and products directed to the preparation of inorganic fertilizers containing Si values; slags not provided for above are herein classified.
- 63** This subclass is indented under subclass 31. Processes and products directed to the preparation of inorganic fertilizers containing carbonates, oxides, sulphates or halides; shells, such as oyster shells, are herein classified.

**64.01 Forms or conditioning:**

This subclass is indented under subclass 1. Processes not hereinabove provided for, directed to the preparation of fertilizers in commercial forms.

- (1) Note. The fertilizer forms, as articles of manufacture, also belong here. Methods directed to the conditioning of fertilizer values, such as obviating hygroscopicity, granulating, or rendering a fertilizer friable (as by quenching) are also classified herein.

**SEE OR SEARCH CLASS:**

- 47, Plant Husbandry, for structures formed of or containing fertilizers, such as flower pots, stakes and mulching sheets, utilized in plant husbandry, and fertilizing cartridges adapted to be buried in the earth.
- 264, Plastic and Nonmetallic Article Shaping or Treating: Processes, for processes of comminuting or granulating a liquid or molten substance are classified in subclasses 5+, even though the granulated substance is claimed as a fertilizer. Processes of granulating a mixture of reagents to give a fertilizer composition are in this class (71), in the subclass determinative of the composition.
- 206, Special Receptacle or Package, subclasses 524.1+ for a container with specified material for content or receptacle, particularly subclass 524.5 for a container with caustic content.
- 516, Colloid Systems and Wetting Agents; Subcombinations Thereof; Processes of Making, Stabilizing, Breaking, or Inhibiting, for colloid systems or agents for such systems or making or stabilizing such systems or agents, especially subclasses 20+ for organic continuous liquid phase, subclasses 38+ for bituminous, coal, or Carbon suspended in aqueous continuous phase, subclasses 77+ for colloid systems of colloid-sized solid phase dispersed in aqueous continuous liquid phase; in each instance, when generically claimed or when there is no hier-

archically superior provision in the USPC for the specifically claimed art.

**64.02 Coating and granulating:**

This subclass is indented under subclass 64.01. Subject matter including the steps of covering and making the material finer or vice versa.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

- 64.03+, for granulating processes.  
64.07, for coating processes.  
64.11, and 64.12, for coated products.

**64.03 Granulating:**

This subclass is indented under subclass 64.01. Subject matter for forming the material into granules or grains.

**64.04 By comminuting:**

This subclass is indented under subclass 64.03. Subject matter wherein the material is broken into small pieces.

**64.05 By agglomerating:**

This subclass is indented under subclass 64.03. Subject matter wherein the material is collected or gathered into a mass, e.g., formed into increasing larger balls as by rolling, etc..

**64.06 By fluid contact:**

This subclass is indented under subclass 64.03. Subject matter wherein the material is formed into particles upon being contacted by a gas or liquid.

**64.07 Coating:**

This subclass is indented under subclass 64.01. Subject matter wherein the material is covered with a material.

**64.08 Slurry or suspension:**

This subclass is indented under subclass 64.01. Subject matter wherein the material is in the form of a slurry, i.e., a thin watery mixture of a fine insoluble material or a suspension or a condition of a substance whose particles are dispersed through a fluid but not dissolved in it.

**64.09 Gel:**

This subclass is indented under subclass 64.01. Subject matter wherein the material is in the form of a gel, i.e., a jellylike substance formed

by coagulation of a colloidal solution into a solid phase.

**SEE OR SEARCH CLASS:**

516, Colloid Systems and Wetting Agents; Subcombinations Thereof; Processes of Making, Stabilizing, Breaking, or Inhibiting, subclasses 98+ for continuous or semicontinuous solid phase (gels, pastes), or agents for such systems or making or stabilizing such systems or agents, when generically claimed or when there is no hierarchically superior provision in the USPC for the specifically claimed art.

**64.1 Liquid:**

This subclass is indented under subclass 64.01. Subject matter wherein the material is in the form of a nongaseous fluid.

**64.11 Controlled release:**

This subclass is indented under subclass 64.01. Subject matter wherein the material is released to the environment in which it is placed in a regulated manner.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

64.07, for the process of coating material of this kind.

**64.12 Anticaking:**

This subclass is indented under subclass 64.01. Subject matter wherein the material is treated to prevent it from clumping, sticking together, etc..

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

64.07, for the process of coating materials of this kind.

**64.13 Forms having structure, e.g., particle size, dimensions, etc.:**

This subclass is indented under subclass 64.01. Subject matter which has structure (apparatus) or includes particle size, dimensions, etc., of the material.

**CROSS-REFERENCE ART COLLECTIONS**

**900 FOAMS:**

Art collection involving the material in the form of a foamlike matter.

**SEE OR SEARCH CLASS:**

516, Colloid Systems and Wetting Agents; Subcombinations Thereof; Processes of Making, Stabilizing, Breaking, or Inhibiting, subclasses 10+ for discontinuous gas or vapor phase in continuous liquid phase or agents for such systems or making or stabilizing such systems or agents, when generically claimed or when there is no hierarchically superior provision in the USPC for the specifically claimed art.

**901 REFUSE CONDITIONING:**

Art collection involving the treatment of waste material to enhance its fertilizer value.

**902 NITRIFICATION INHIBITION:**

Art collection involving the prevention of the nitrification or denitrification activity of growth media bacteria.

**903 SOIL CONDITIONER:**

Art collection involving material having values which treat the soil other than providing nutrients for plants.

**SEE OR SEARCH CLASS:**

405, Hydraulic and Earth Engineering, subclass 263 for chemical earth treatment or control.

**904 CARRIER:**

Art collection involving material which serves as a substrate for the plant nutrients.

END